

Fig. 1.

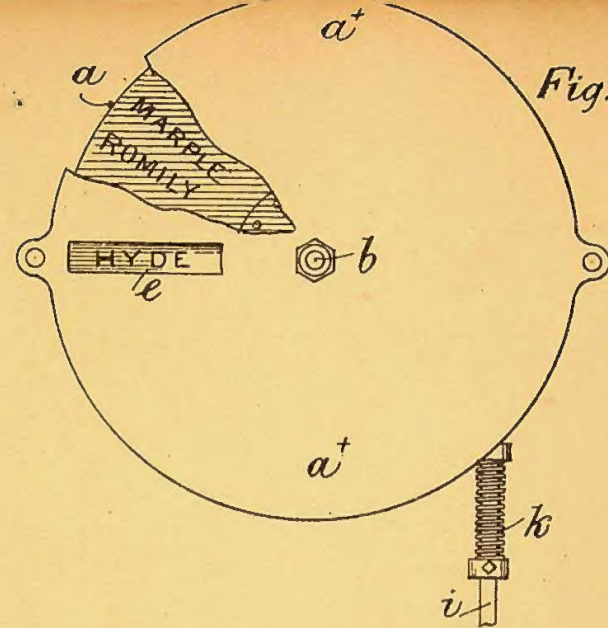


Fig. 2.

Fig. 3.

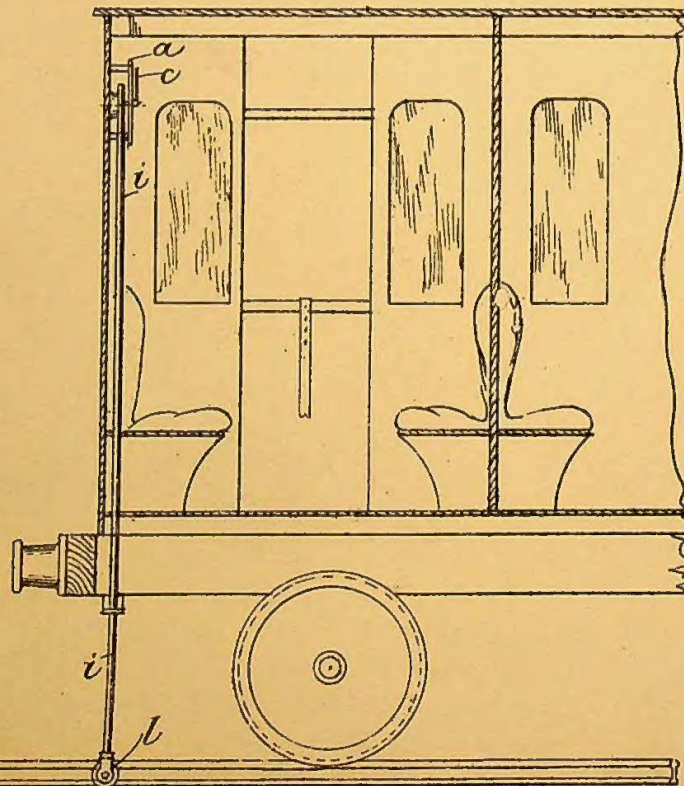
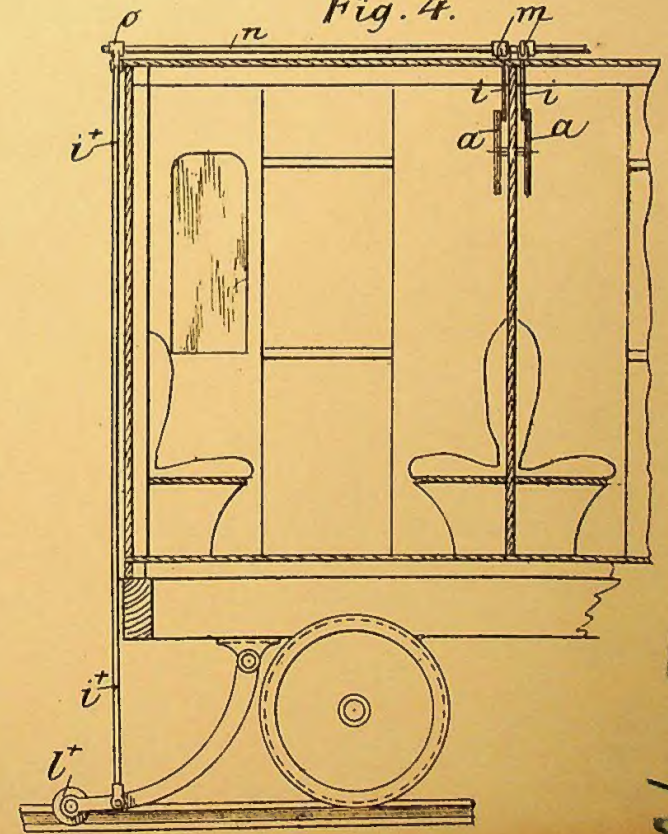


Fig. 4.



40/370

Shank

1895

17803-95

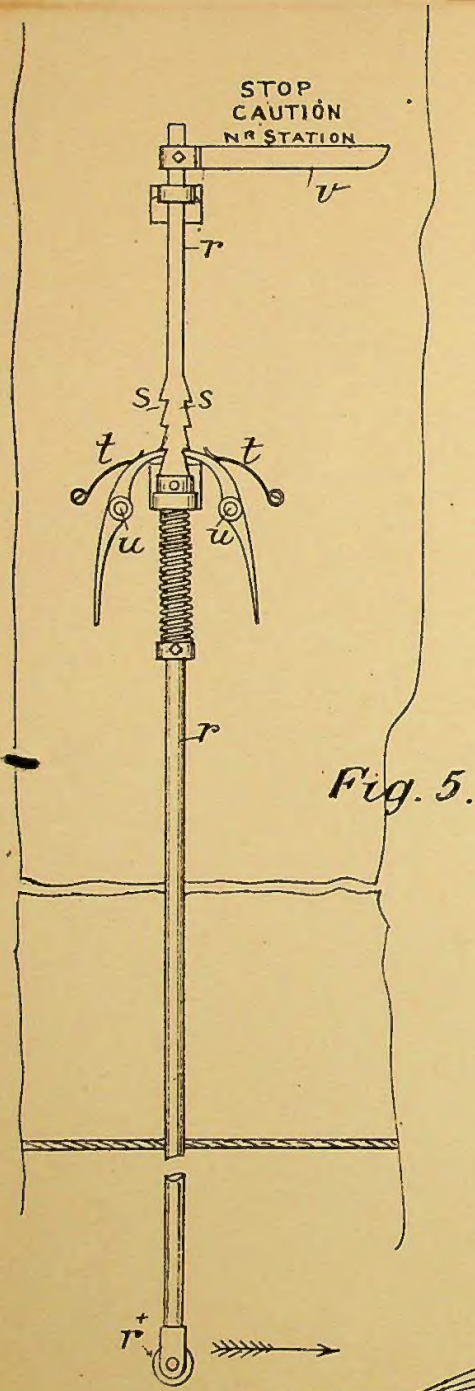


Fig. 5.

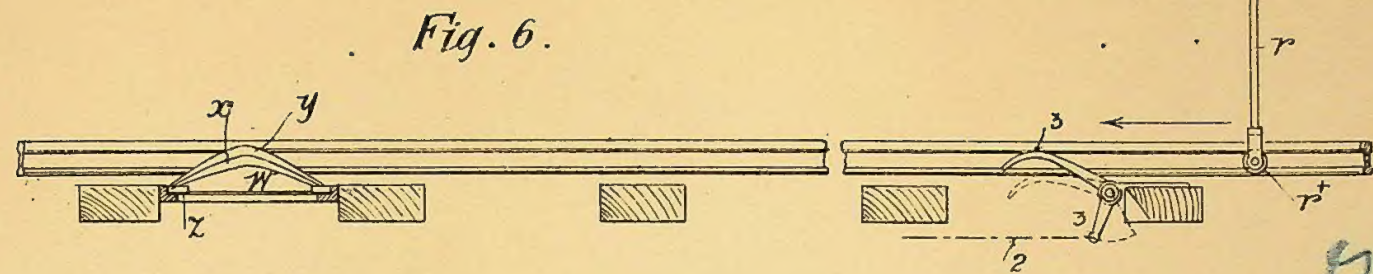
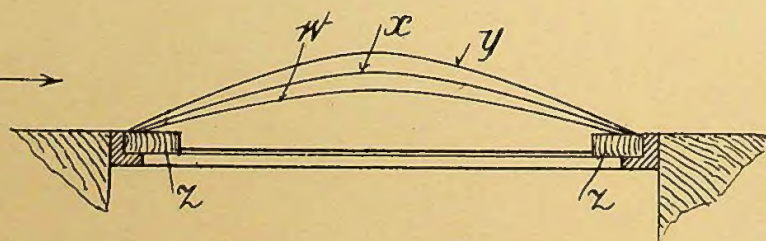


Fig. 6.

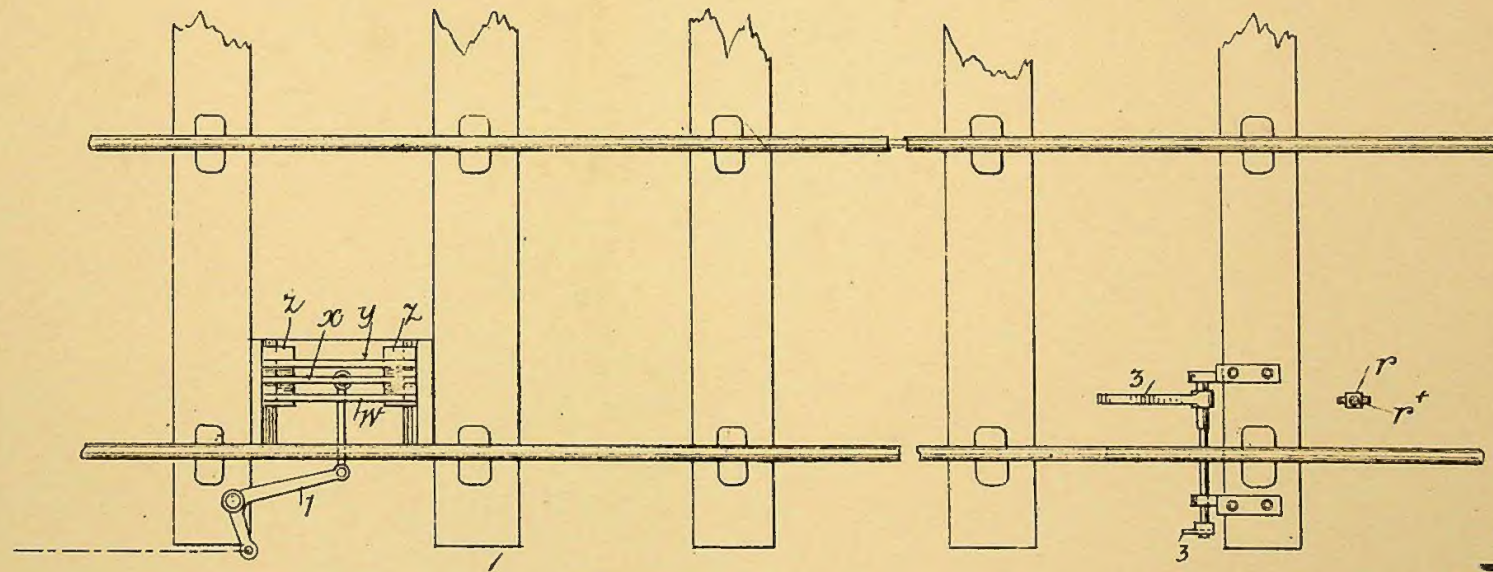


Fig. 7.

40-49

Shank

17803-95

DIV

N° 17,803



A.D. 1895

Date of Application, 24th Sept., 1895

Complete Specification Left, 24th June, 1896—Accepted, 25th July, 1896

## PROVISIONAL SPECIFICATION.

## Improved Apparatus for Signalling on Railways.

I WILLIAM SHARP of 69 Georgeana Street, Bury, in the County of Lancaster, Tool Fitter, do hereby declare the nature of this invention to be as follows:—

This invention relates first to improved means for signalling or indicating automatically to passengers in the carriages of a railway train in motion the name of the station which the train is approaching and secondly for signalling or indicating to the engine driver or guard whether the line is clear in front, or to give the signal "caution" or "danger" as the case may be.

For the purposes of my invention I fix in each carriage (or in each compartment if preferred) a dial upon which the names of all the stations upon the particular railway (or section thereof) are printed or otherwise marked radially and in the exact order in which they occur.

Through the centre of this disc passes an axle provided with a pointer or index on the face of the disc and a ratchet wheel on the back thereof. In gear with this ratchet wheel is a catch or pawl carried by a lever which is connected by a link to a vertical rod carried in suitable bearings and projecting downwards through the floor of the carriage. This rod is provided with a spiral spring having a constant tendency to force the rod downwards into its lowest position. The lower end of the rod is forked and carries a friction bowl or wheel.

At a convenient distance from each station a double inclined plane is fixed on two cross bearers in such a position that as each carriage passes by, the friction bowl or wheel passes over the inclined plane, raising up the sliding rod and causing the lever and catch attached thereto to take up one or more teeth of the ratchet wheel and thus cause the pointer or index to move in front of the fixed dial and indicate the name of the next station to which the train is approaching.

The vertical rod is so connected to a spring or electric bell that each time it rises it causes the bell to sound at the same time, to call the attention of the passengers to the change of name. This same indicator may also be repeated on the engine or in the guard's van and in connection therewith (or by itself) I mount a second sliding rod which is provided with a rack of teeth into which takes a spring catch which is mounted on a fixed stud so that whenever the friction bowl or wheel passes over the double incline it raises up the rod and causes a finger fixed thereto to indicate the words "near station" and ring the bell and the catch holds it in this position until the driver or guard releases it.

In connection with this there are on the line two other movable inclined planes of different heights which are fixed on a sliding frame and are connected to the signal wires by bell cranks in such a way that when the line signal man moves the ordinary semaphore signal lever over half way, it will bring the second inclined plane into the path of the bowl or wheel and lift the vertical rod a little higher, and cause its finger to indicate "caution," and when the signal is pulled over the "danger" it will bring the third inclined plane into working position and cause the finger to be raised up still higher to the word "stop"; and thus not only are the names of all stations indicated as they are approached, but by the same means the engine driver (or the guard or both) will have a visible and audible signal given when "caution" is necessary or there is "danger" ahead. When the signal has been acted upon and all is clear ahead the driver or guard releases the holding catch and the sliding rod and its finger will fall again to the lowest position ready for action.

[Prior Ed.]

*Sharp's Improved Apparatus for Signalling on Railways.*

In or near the signal box there is an additional lever provided which is connected by a wire to a lever fixed at the side of the line some distance beyond the sliding frame, so that if the signal man pulls over this lever the approaching train coming against the lever at the side of the line depresses it and causes it to ring a bell in the signal box in time for the signal-man to move the sliding frame and thus warn the approaching train of danger ahead.

Dated this 23rd day of September 1895.

GEO. DAVIES & SON,  
 4, St. Ann's Square, Manchester, Agents for the Applicant.

COMPLETE SPECIFICATION.

Improved Apparatus for Signalling on Railways.

I WILLIAM SHARP of 69 Georgeana Street, Bury, in the County of Lancaster, Tool Fitter, do hereby declare the nature of this invention and in what manner the same is to be performed to be particularly described and ascertained in and by the following statement:—

This invention relates first to improved means for signalling or indicating automatically to passengers in the carriages of a railway train the name of the station which the train is approaching, and secondly for signalling or indicating to the engine driver or guard whether the line is "clear" in front, or to give the signal "caution" or "danger" as the case may be.

The nature of my said invention and the manner in which the same is to be performed or carried into practical effect will be readily understood on reference to the two sheets of drawings hereunto annexed and the following explanation thereof.

Fig. 1 on Sheet 1 of the drawings is a partial front elevation of one of my improved indicators, and Fig. 2 is a modification of the same.

Figs. 3 and 4 are sections showing the application thereof to passenger carriages.

Fig. 5 on Sheet 2 is an elevation of the part of the apparatus applied to the guards van or engine and

Figs. 6 and 7 are elevation and plan view of the parts attached to the permanent way.

For the purposes of my invention I fix in each carriage (or preferably in each compartment as shown at Figs. 3 and 4) a dial *a* (see Fig. 1) upon which the names of all the stations upon the particular railway (or section thereof) are printed or otherwise marked radially, and in the exact order in which they occur.

Through the centre of this disc passes an axle *b* provided with a pointer or index *c* in front of the face of the disc *a* and a ratchet wheel *d* on the back thereof; or instead of fixing the pointer on the end of the axle *b* and having a stationary disc *a* I sometimes fix the name-disc on the end of the axle, so that it revolves with it and I place a fixed screen *a\** in front thereof provided with a horizontal opening *e* through which only the name of one station is visible as shown at Fig. 2. This latter arrangement I consider preferable.

In gear with the ratchet wheel *d* (Fig. 1) is a catch or pawl *f* carried by a lever *g* which is connected by a pin *h* or a link to a vertical rod *i* carried in suitable bearings, and projecting downwards through the floor of the carriage (see Figs. 3 and 4). This rod *i* is provided with a spiral spring *k* having a constant tendency to force the rod downwards into its lowest position. The lower end of the rod *i* is forked and carries a friction bowl or wheel *l* in the case where only one indicator is required for each carriage; but in cases where an indicator is required to be placed in each compartment I prefer to carry the vertical rod *i* from each indicator upwards through the roof as shown at Fig. 4 each rod being

*Sharp's Improved Apparatus for Signalling on Railways.*

connected by a short lever *m* to a longitudinal shaft *n* the end of which projects over one end of the carriage and is provided with a lever *o* hinged to the upper end of a vertical rod *i* the lower end of which carries the friction bowl or wheel *l*†.

5 On the permanent way at a convenient distance from each station (see Fig. 3) a double inclined plane or raised curve *p* is fixed on two cross bearers *q* in such a position that, as each carriage passes by, the friction bowl or wheel *l* passes over the inclined plane or curve *p* thus raising up the sliding rod *i* or *i*† and causing the lever *g* and the catch *f* attached thereto to take up one or more teeth of the ratchet wheel *d* before named and thus cause the pointer or index *c* to move in front of the fixed dial *a* (or the dial to revolve behind the fixed slotted screen *a*†) and thus indicate the name of the next station to which the train is approaching.

The vertical sliding rod *i* inside the carriage is to be so connected to a spring or electric bell that each time it rises it will cause the bell to sound at the same time, 15 to call the attention of the passengers to the change of name. The same kind of indicator may also be repeated on the engine or in the guard's van, and in this case in connection therewith (or by itself) I mount a second sliding rod *r* (see Fig. 5) which is provided with a rack of teeth *s* into which takes a spring catch *t* which is mounted on a fixed stud *u* so that whenever the friction bowl or wheel *l*† at the bottom of this rod passes over a double incline, or curve, *w* on the permanent way it raises up the rod *r* and causes a finger *v* fixed thereto to indicate the words "near station" and ring the bell, and the catch *u* holds it in this position until the driver or guard releases it.

For rendering this action more certain I sometimes make a rack of teeth on each 25 side of the rod *r* (as shown at Fig. 6) and have two catches so arranged that they can both be grasped at the same time by the hand.

In connection with this apparatus there are also arranged on the line two other movable inclined planes or curves *x* and *y* of different heights which are fixed on a sliding frame *z* (see Figs. 5, 6 and 7) and are connected to the signal wires by 30 bell cranks *l* in such a way that when the line signal man moves the ordinary semaphore signal lever over half way it will bring the second inclined plane or curve *x* into the path of the friction bowl or wheel *l*† and lift the vertical rod *r* a little higher and cause its finger to indicate "caution," and when the signal lever is pulled over to "danger" it will bring the third inclined plane or curve *y* into 35 working position and cause the finger *v* to be raised still higher up to the word "stop" and thus not only are the names of all the stations indicated as they are approached, but by the same means the engine driver (or the guard or both) will have a visible and audible signal given when "caution" is necessary or when there is "danger" ahead.

40 When the signal has been acted upon and all is clear ahead the driver or guard releases the holding catch (or catches) *t* and the sliding rod *r* and its finger will fall again into its lowest position ready for action.

In or near the signal box there is also an additional lever provided, which is connected by a wire 2 (see Figs. 6 and 7) to a lever 3 fixed at the side of the line 45 some distance beyond the sliding frame *z* so that if the signal man pulls over this lever the approaching train coming against this lever 3 at the side of the line depresses it, and causes it to ring a bell in the signal box in time for the signal man to move the sliding frame *z* and thus warn the approaching train of danger ahead.

50 Another bell or gong should be placed at such a distance at the side of the line that when the signal man puts the lever back again it will cause this bell or gong to be sounded so as to signal to the driver that all is "clear."

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed I declare that what I 55 claim is:—

First. The combination with a circular name dial on a central axis placed inside

4 N° 17,803.—A.D. 1895.

*Sharp's Improved Apparatus for Signalling on Railways.*

the carriage of a ratchet wheel, pawl and vertical sliding rod the latter passing through the floor or the roof and being provided with a bowl which passes over a double incline or curve fixed on the permanent way near to each station, so that the dial or the index finger is caused to move once as each station is approached substantially as described and illustrated. 5

Secondly. The improved means (substantially as described and illustrated) whereby the attendant in the signal box can communicate with the guard in his van in case of fog or otherwise.

Dated this 23rd day of June 1896.

GEO. DAVIES & SON,  
4, St. Ann's Square, Manchester, Agents for the Applicant. 10

London : Printed for Her Majesty's Stationery Office, by Darling & Son, Ltd.—1896